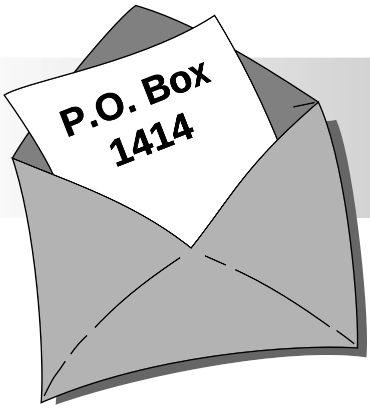

We can only answer questions or remarks of general interest to our readers, concerning projects not older than two years and published in *Elektor Electronics.* In view of the amount of post received, it is not possible to answer all letters, and we are unable to respond to individual wishes and requests for modifications to, or additional information about, *Elektor Electronics* projects.

PCB design and mains voltage

(April 1999)

Dear Editor—In the article ‘PCB design and mains voltage’ you state that the distance between the mains termination on a board to any other conductor must be not less than 6 mm. However, I would not like to be responsible for the designs shown. In Figure 4, the circuit is made unnecessarily dangerous by specifying a minimum distance of 3 mm between the mains terminals and the secondary circuit. It may well be that the intention here is to use a 3-core mains cable with the protective earth securely connected.

Although the concept behind the article is correct and useful, I would suggest that it is better (and safer) to specify a distance between mains-carrying tracks and terminals of at least 10 mm.

G. v. Hamersfeld

We have indicated in the article that the legal regulations must be seen (as intended) as minimum dimensions. That is why the drawings show >3 mm and >6 mm respectively. Any constructor or designer is, of course, free to increase these minimum spacings. This is particularly so if there is a likelihood that the minimum spacings may be inadequate (such as use in a damp atmosphere). It is, of course, sensible to make the layout of a printed-circuit board so that the spacings between tracks are not reduced needlessly.

Your suggestion of a minimum of 10 mm is laudable, but cannot be defended by any regulation or standard. But, again, even if there are no legal requirements to do so, it is always advisable to maximize spacings.

Joystick and MIDI interface

(December 1998)

Dear Editor—I have noticed that on quite a few sound cards, such as several from Yamaha, the MIDI-IN does not work if R_{10} at pin 4 of K_4 has a value of 220 Ω as specified. If the value is increased to 470 Ω, all work well.

G, Huizinga

Thanks for this tip, which many readers will no doubt find very useful.

Digital audio formats

(February 1999)

Dear Editor—In the article ‘Digital audio formats’ MPEG 1 Layer 3 (MP3) is discussed and it is intimated that this format uses lossy compression which is, however, not audible. I cannot agree with this.

Some years ago, I had a DCC recorder which uses PASC compression. This is similar to MP3 in that it uses a masking effect, combined with loss-free reduction, based on the threshold of hearing. I could definitely hear the compression. With complex pieces of music, this manifested itself as short repetitive whistles superimposed as it were on the music.

More recently, I listened to a MiniDisc recorder in a hi-fi retail shop. This system uses ATRAC compression, which is also similar to MP3. I was perhaps even more astonished than the salesman that I could hear the compression straightaway. In this case, it manifested itself in very short interruptions at certain frequencies. For instance, in normal speech, the s- or f- sound is seamless, but in the case of the MiniDisc it sounds as if they are subdivided into many parts which are not connected seamlessly. In the consequent ‘seams’ the high frequencies that should be there are all but absent.

MP3 sounds identical if the compression takes place with less than 256 kbps (6:1); at that compression, I don’t hear it, but at 128 kbps (12:1) it is quite audible (at least to me). I don’t know anyone else who can hear the compression that clearly (without an A/B comparison).

I should like to hear from other readers with similar experiences at
lweekers@yahoo.com

L. Weekers

Compression always affects the signal. In MP3 and other systems, a method was sought and found in which the inescapable effect is inaudible for virtually everybody. Your experiences show that there are people with such good hearing that they can discern the effect.